Boscop 8000/8500 series Vend Station Technical Service Manual

June 2010

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INTRODUCTION

Thank you for choosing the *Boscop* **8000/8500 Series** Vending Copier Controller for your vending needs.

Four models are offered in this series:

- *CM-8000*: **US version.** Multi-Coin, Escrow Changer. Accepts nickels, dimes, quarters and dollar coins. It escrows and pays out change in nickels, dimes and quarters.

- **CM-8000i**: **International option.** Multi-Coin, Escrow Changer. Accepts up to 6 coins and pays change in up to 4 coin values.

- **CM-8500**: **US version.** Multi-Coin, Multi-Bill, escrow changer. Accepts nickels, dimes, quarters, dollar coins, and bills. It also escrows and pays out change in nickels, dimes and quarters.

- **CM-8500i**: **International option.** Multi-Coin, Multi banknote escrow changer. Accepts up to 6 coins, 4 banknote values and pays change in up to 4 coin values.

International versions available for many countries, please contact us for more details including which coins and banknotes you wish to accept.

Installing the **8000/8500** Coin-Op is very easy. (Please see the enclosed copier-specific instruction sheet.) Also, please remember that the weight of a full coin changer along with full cash box can reach more than 50 lbs. Be careful when working around or moving this unit.

Your coin-op comes with two sets of keys. One set is for the door lock and the other set is for the bypass. Make an extra set of duplicate keys. If a key is lost, it is possible that the lock assembly may need to be replaced.

DO NOT KEEP BOTH SETS OF KEYS ON THE SAME KEY RING

Label the keys for the **8000/8500** Series Copier Controller and put a pair in a safe place.

All counters are read off the display and track the usage of your **8000/8500** Series Copier Controller by vending copies, bypass (free) copies, and deposits (net money inserted), for the current usage period, and for the lifetime of the product. Only the current usage counters can be reset to zero.

The coin return plunger allows the user to eject unaccepted coins, or to pay out remaining credit (change) not used to make copies. The coin return cup insures that any large payout of coins will not spill out onto the floor.

Fill out the last sheet with the serial number, key number and other details for future reference.

SECTION 2 – PARTS LIST

1. Coin-Op
2. Power cable
3. Door keys
4. Bypass keys
5. Product guide

By-Pass Key

Coin Plunger

Graphic Display
1.5" X 2.5"

Coin tube changer, accepts
5, 10, 25 cents, $1.00 coin

Front door opening for easy
access and service

Optional Bill Validator

Door Lock

Optional Base
15" X 16.5"

Coin Return
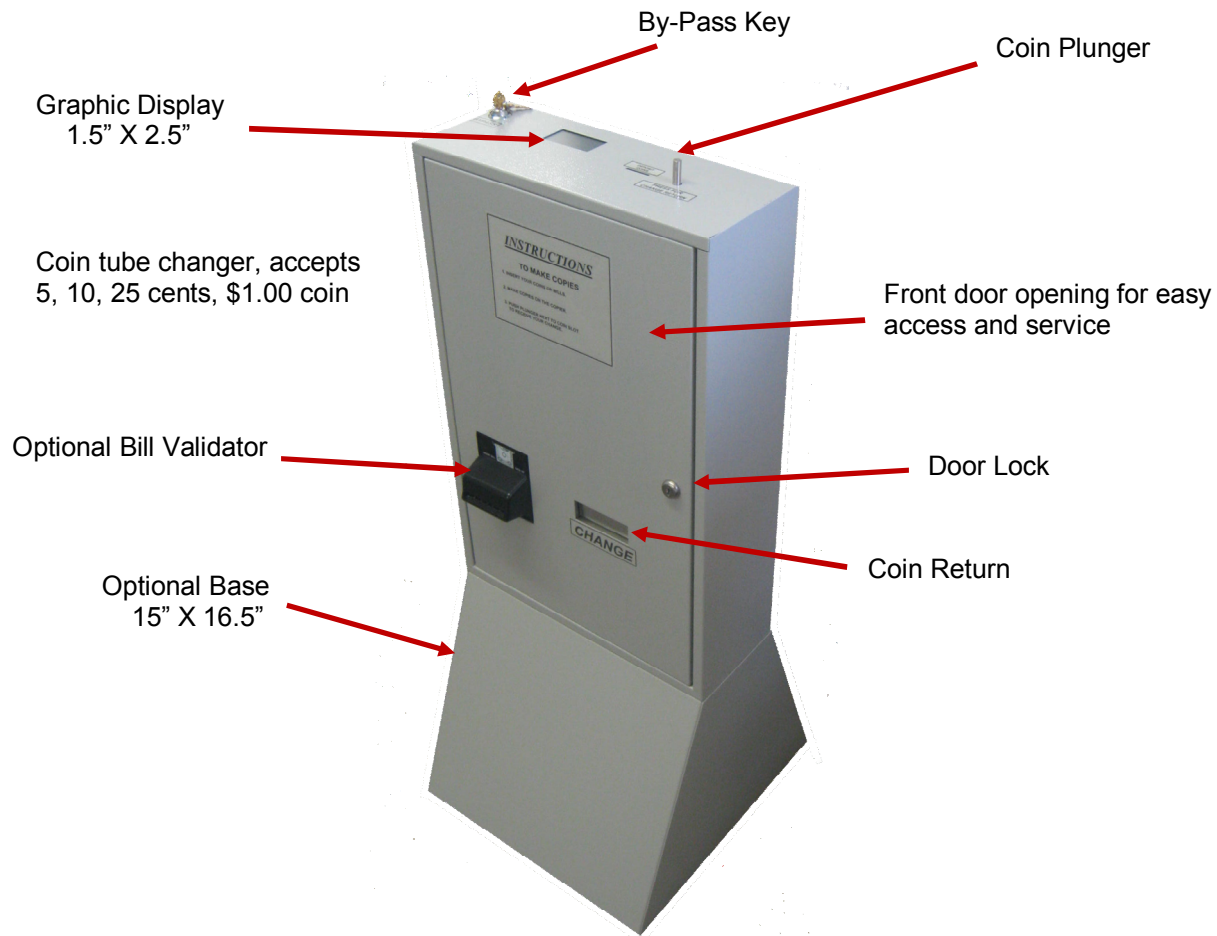
Power Requirements:

110v – 240v 50/60Hz AC input

Tool requirements:

3/8" Nut Driver (for base)
11/32" Nut Driver (to secure cables)

Your copier technician will have any tools needed to access the interface connector in or on the copier.

SECTION 3 – QUICK SET-UP: 1 – 2 – 3 – 4 - TEST

Check that all equipment is accounted for. **Read all the instructions <u>before</u> installing.**

1 - Unpack Coin-Op: Check list
- Check interface cable so that it matches the copier you are to install on.
- Power cable (in coin box tray) Coin Changer Wire tied in, Optional Bill Validator.
- Keys, taped in a plastic bag to the Coin-Op. (By pass keys (2) on a thick plastic card, Door keys (2) on a thin plastic card)

If you have purchased the optional base:
- Pedestal will have feet in a plastic bag taped to the pedestal
- Nuts and washers will be on the four studs.

2 - Assembly:

Cable Assembly:
- Tools needed: 11/32" nut driver to secure cable clamp.
- Route power cable through the hole in the back of the door (Option – first run power cable though the base to the board in the coin box).
- Route the interface cable out of the unit through the hole in the door
- Using an 11/32" nut driver, secure both the interface cable and the power cable with the cable clamp on the stud provided.

Optional base assembly:
- Tool needed, 3/8" nut driver
- Taped to the base in a bag are four plastic feet for leveling
- Turn base over and screw in feet – turn back over and check if level
- Remove nuts and washers on base
- Place Coin-Op on base
- Place washers then nuts on the studs and secure

3 - Load coin tubes
- See section View Coin Acceptor Meters below.

4 - Interface Cable to copier
- Power Down the coin box and unplug the Copier before connecting to the copier.
- Check to see if the copier requires software settings to use a control device.
- The interface cable is about six feet long and usually is sitting on the same side of the copier as the interface port. This tends to be the left side of most copiers.
- Access the copiers interface connector, route the interface cable out of the copier
- Reassemble the copier.

Once all connections are made and all equipment is assembled, plug in the copier and coin box and turn on the copier.

Test:
1) Set up foreign device activation through the service mode settings via the copier's control panel.
2) Test copier for control (press the **copy button**, copier be disabled and not make a copy)
3) Coin box display should read **"Insert Coin"** and **"Insert Bill".**
4) Insert coin or bill (if this option is installed) display will show total escrow
5) Make a copy, the display will read **"THANK YOU"** then update with the total copies made and money balance in escrow
6) Press the coin return plunger and check for correct change if applicable.

Default Settings:

Parameter menu:

Peripherals	Bill validator: [No]
Copy Cost	
Price 1	$0.05
Price 2	$0.05
Price 3	$0.05
Price 4	$0.05
Price 5	$0.05
Price 6	$0.05
Price 7	$0.05
Price 8	$0.05
Bill values	
	$1.00 [No]
	$5.00 [No]
	$10.00 [No]
	$20.00 [No]
Max Cash Value (escrow)	$20.00
Sense Time	50 ms
Blind Time	100 ms
Exit Delay	500 ms
Splash Screen	2 Sec
Splash Period	10 Sec

SECTION 4 – MANAGER MENU FUNCTIONS - to change settings or read meters.

Manager Mode, Up, Down, Enter. Press Manager button (top button as viewed in the vend station) to enter mode and then the up and down buttons to change settings. Once changed press 'Enter' to keep the change.

1. Turn on By-Pass Key. Display will show: "****Bypass Mode****".
   Total User: 0
   Total Bypass: 0
   Non-Resettable User: 0
   Non-Resettable Bypass: 0

2. Press **Manager Button** located on the control board. Display will reverse its view so you can read it from the back of the coin box and show:

   Manager Menu
   Save Changes & Exit
   Skip Save & Exit
   (Z) Service Locked [NO]
   Maintenance Menu
   Parameter Menu
   Diagnostics Menu
   Factory Defaults Menu

MANAGER MENU

1. **Save Changes & Exit –**
   A. Any changes made, including clearing meters and escrow, must be saved to non-volatile memory by pressing **ENTER** on this selection otherwise they will be lost when the unit reboots.
   B. Display will show **"SETTINGS SAVED"**

2. **Skip Save & Exit –**
   A. Press **ENTER** to exit Manager Menu Function and don't save to non-volatile memory any of the changes made.   Changes made though will apply until the unit is rebooted

3. **(Z) Service Locked [NO]**
    This parameter can only be cleared (set to NO) manually. It's set to 'Yes' automatically by the software if there is a failure in the coin changer and the coin-op can longer receive and pay change. To re-enable the coin-op after the problem has been fixed, this parameter must be cleared.

4. **Maintenance Menu**
    A. **Exit –** Exit back to **Main Menu**.
    B. **View Copy Meters**
       Exit
       --USER METERS—
       PRICE 1: 0
       PRICE 2: 0
       PRICE 3: 0
       PRICE 4: 0
       PRICE 5: 0
       PRICE 6: 0
       PRICE 7: 0
       PRICE 8: 0
       USER TOTAL: 0

       --BYPASS METERS –
       PRICE 1: 0
       PRICE 2: 0
       PRICE 3: 0
       PRICE 4: 0
       PRICE 5: 0
       PRICE 6: 0
       PRICE 7: 0
       PRICE 8: 0

       BYPASS TOTAL: 0

       --NON-RESETTABLE METERS--
       USER: 0
       BYPASS: 0
    C. **Exit –** Exit back to **Main Menu**.

D. VIEW COIN ACCEPTOR METERS
The Boscop 8000/8500 supports both level 2 and level 3 MDB coin changers. Level 2 changers do not have internal tube meters so these meters are handled by the Boscop control board. Level 3 changers have internal tube meters which this coin-op uses. What type of changer you have is displayed at the top of the *Coin Acceptor Meters* Menu.

Level 2 Changers
The CoinCo 9302-GX is a level 2 changer as is the Boscop parallel coin mech converter board. Level 2 devices require that you program the tube meters to the number of coins added to the changer unless you add them through the top of the changer (the preferred method). If your unit has a coin mech and the Boscop MDB converter board there's no need to program these meters as coin mechs don't have coin tubes. To set the tube meters, go to the *Coin Acceptor Meters* menu and scroll down to *Tube Totals*. Press the Enter button on any one of the meters and you will enter edit mode. Use the up and down buttons to set the meter; to clear a meter, press the up and down buttons simultaneously. The meters will self adjust by setting themselves to the value reported by the changer as they pass through the low and high sensors. If you add coins from the top, the meters will increment each time a coin is added. If you dispense coins using the buttons located on the changer, the meters will decrement. Be careful though, if you hold down one of the tube pay buttons and dispense more than 7 coins at a time, the meters may fall behind as the MDB protocol is

only capable of transmitting 7 coins at a time. If you need to dispense more than 7 coins rapidly, wait 2 seconds after 7 coins have been dispensed and then press the button again.

Level 2 Tube Loading Method 1

With the coin-op on, turn the Bypass key and press the Manager Button. Go to *Maintenance->View Coin Acceptor Meters* and scroll down to *Tube Totals*. If the tubes are empty, make sure each of the meters is zeroed out (press up and down buttons together) before going any further. Insert all the coins in the top of the coin-op. You will notice that the tube totals will increase. When finished, scroll down to the bottom of the menu and select *Zero Credit* to erase your escrow. Before exiting programming mode, select *Save Changes & Exit* to save the meters to non-volatile memory.

Level 2 Tube Loading Method 2

Count out X number of each coin and insert them into the coin tubes through the slot just above the tubes. With the coin-op on, turn the Bypass key and press the Manager Button. Go to *Maintenance->View Coin Acceptor Meters* and scroll down to *Tube Totals*. For each coin, program the tube total to the number of coins deposited. Before exiting the programming mode, you must select *Save Changes & Exit* to save the meters to non-volatile memory.

The table below shows the number of coins reported by the Coin-Co 9302-GX changer when the low and high sensors are activated. You will notice that the number of coins reported is not the same as the number of coins required to activate the high sensor.

9302- GX Coin Tube Sensor Output

Coin	Low Sensor	High Sensor output when full	Coins required to active high sensor
Nickels	6	76	81
Dimes	8	107	116
Quarters	6	75	77

Level 3 Changers

The Coin-Co Quantum and Vortex as well as the ConLux 5 are level 3 changers. These changers have internal tube meters that keep track of the number of coins they think they have and report back that information to the control board when requested. If you don't have enough coins to fill the entire changer, it's recommended that you use Tube Loading Method 1 described below otherwise the meters will be off significantly.

Level 3 Tube Loading Method 1

With the coin-op on, turn the Bypass key and press the Manager Button. Go to *Maintenance->View Coin Acceptor Meters* and scroll down to *Tube Totals*.   If the tubes are empty, make sure each of the meters is zeroed out by removing and then reinstalling the tube cassette (ConLux only). Insert the coins in the top of the coin-op. You will notice that the tube totals will increase. When finished, scroll down to the bottom of the menu and select *Zero Credit* to erase your escrow. Before exiting programming mode, select *Save Changes & Exit* to save the meters to non-volatile memory.

Level 3 Tube Loading Method 2

You will need the exact coinage listed in the last column of the table below to continue. With the coin-op off, remove the tube cassette by pressing the RED tube latch on the coin changer. Insert the coins in the proper tubes. If using the ConLux 5, use the middle three tubes. Re-Insert the cassette and power the coin-op on.

Note: If working with a ConLux 5 changer, anytime the coin cassette is removed while powered up, the changer will erase the tube totals for each coin and reset them to the highest sensor activated. For example, if the .25 low sensor is covered but there are actually 50 coins in the tube, it will still only report 6 coins since that is all it's sure it has. If the low sensor is not covered it will report 0 coins. Be careful not to tip the changer while powered up as it will throw off the meters.

Conlux Sensor Output

Coin	Low Sensor	High sensor output when full	Coins required to active high sensor
Nickels	4	64	68
Dimes	9	97	106
Quarters	6	71	77

The cash box meters (coins not stored in the tubes) are kept locally and can be cleared from inside this menu.

```
Exit
MDB Changer Level: 2
Return Level: (if pressed, <PRESSED> will show to the right.)
-- -- TUBE TOTALS -- --
Coin .05:       0        $0.00
Coin .10:       0        $0.00
Coin .25:       0        $0.00
Coin 1.00:      0        $0.00
Total:       $0.00

-- -- CASH BOX TOTALS -- --
Coin .05:       0        $0.00
Coin .10:       0        $0.00
Coin .25:       0        $0.00
Coin 1.00:      0        $0.00
Coin 5:    Not supported
Coin 6:    Not supported

--ZERO--
(Z) Zero Cash Box
(Z) Zero Credit
Exit
```

E. VIEW BILL ACCEPTOR METERS

```
Exit
--Stacker Totals--
Ones:          0        $0.00
Fives:         0        $0.00
Tens:          0        $0.00
Twenties:      0        $0.00
Totals:                 $0.00
Bills in escrow:        $0.00
Total:                  $0.00
--ZERO--
(Z) Zero Stacker
Exit
```

F. PRINT METERS
Press once to send all the meters kept to the serial port located on the DB9. This port can be attached to a computer or printer. The serial port parameters are 9600, 8N1.

G. Adjust Credit
            Exit
            Credit: $0.00
                Press **Enter** will display (Edit) in the upper right corner, use **Up** and **Down** buttons to change value in increments of $0.05. Press **Enter** to exit Edit Mode.
            (Z) Zero Credit
                Press **Enter** to set the current balance to zero. Value is not retrievable once cleared.

H. (Z) Zero User Meters
                Press **Enter** to erase the user copy meters. Meters are not retrievable once cleared.

I. (Z) Zero Bypass Meters
                Press **Enter** to erase the bypass meters. Meters are not retrievable once cleared.

J. (Z) Zero Bill Meters
                Press **Enter** to erase the bill stacker meters. Meters are not retrievable once cleared.

K. (Z) Zero Cash Box Meters
                Press **Enter** to erase the cash box meters. Meters are not retrievable once cleared.

PARAMETERS MENU

1. Exit

2. Copy Pricing
            Exit
            PRICE 1: $0.05
            PRICE 2: $0.05
            PRICE 3: $0.05
            PRICE 4: $0.05
            PRICE 5: $0.05
            PRICE 6: $0.05
            PRICE 7: $0.05
            PRICE 8: $0.05
            Exit

            Highlight and press **Enter** – upper right on display will show **Edit**
            Use **Up** and **Down** buttons to increment in 5¢
            Minimum: 0.00 **Maximum:** $1.00
            Press **Enter** again to exit **<Edit>** of Cost.

Note: Setting all the copier prices to $0.00 will turn the coin-op into an add value station requiring PC control.

3. COPIER TIMING
            Exit
            Sense Time: 50 ms
            Blind Time: 100 ms
            Exit Delay: .5 seconds
            Exit

            Highlight and press **Enter** – upper right on display will show **Edit**
            Use **Up** and **Down** buttons to change.

Sense Time Minimum length of time a debit pulse must be active for it to be considered a valid debit pulse. The valid range is 30 – 1275 ms, in 5 ms increments. If sense time is set too short, the coin-op could interpret noise as a debit pulse; if it is set too long, the unit may not register all copies made.

Blind Time This is the length of time after a valid pulse when any further pulses registered by the opto are ignored. The valid range is 30 – 1275 ms. Blind Time masks unwanted pulses (i.e., double pulses or glitches). If this parameter is set too short, double debits could occur, but if set too long, a copy could be missed.

Exit Delay This is the length of time between the time your balance falls below the vend price and the relay is disabled turning off the copier. If Exit Delay is set too short, the relay will be disabled while the copier is still running. If set too long, a customer might become irritated waiting for the last transaction to close. The valid range is .1 seconds – 5 seconds. The resolution for the Exit Delay is .1 seconds.

4. Bill ACCEPTOR
Exit
Bill Validate (No)
$1.00: [No]
$5.00: [No]
$10.00: [No]
$20.00: [No]
Exit

Highlight and press **Enter** to change from NO to YES

5. Set Maximum Cash Value
Set Max amount of cash (bills) to accept
Press **Up** and **Down** buttons to edit. Press **Enter** to exit.

$20.00

6. Set Splash Delay
Set how long the splash delay is displayed. Range is 0 – 60 seconds
Press **Up** and **Down** buttons to edit. Press **Enter** to exit.

2 Seconds

7. Set Splash Period
Set period between splash screen display changes. Range is 1 – 500 seconds

10 Seconds

8. Adjust Contrast
Use **Up** and **Down** buttons to adjust from **MIN to MAX the** display contrast, press **Enter** to exit mode.

9. Machine ID
Set Coin-Op ID printed with the meters.   Range A – Z.
Use the **Enter** button to select each character, use the **Up** and **Down** button to edit.

*	*	*	*

DIAGNOSTICS

1. Exit
2. Relay Diagnostics (control)
Exit
Relay 1: [Off]
Relay 2: [Off]
This Menu is for field service use on checking control of a copier. Use the **Enter** button to toggle the relay state.

3. Opto Diagnostics
This coin-op uses opto 1 for the debit pulse and optos 2-4 for 8-price steering.
Exit
Opto 1: 0
Opto 2: 1
Opto 3: 1
Opto 4: 1
4. Exit

FACTORY DEFAULTS MENU (see Default settings, page 5)

    1. Exit
    2. Restore Defaults – Press **Enter**- display will show:

Factory Defaults Restored

Then it will exit back to bypass mode

Section 6: Trouble Shooting

No Display
- Check to see if the **Red LED** on the control board is flashing. If it is flashing, the processor is running, the display connector is probably not seated correctly
- Check Power cable, un-plug and re-plug in the power cable.

Coin box has change in changer tubes but displays exact change only
- If the Change Cassette tray was removed and the tubes are not above the low sensor, the unit senses there are only a few coins of each in the tray. The con-op requires there be at least 4 nickels, 8 dimes and 6 quarters before it will turn off the exact change message.

Not counting
- Check that sense time is not set too long. Check the copier harness for a tight fit and that the wires are all correctly located, as below.

Display shows 'SERVICE REQUIRED - COIN CHANGER NOT RESPONDING'
- Power down the coin-op and make sure the MDB harness is plugged into J9. If this does not rectify the situation, contact your dealer for service. The board or the changer will have to be repaired.

Display shows 'SERVICE REQUIRED - BILL VALIDATOR NOT RESPONDING'
- Power down the coin-op and make sure the MDB harness is plugged into J9. If this does not rectify the situation, contact your dealer for service. A temporary solution would be to turn off the bill acceptor in the Parameters menu and just use the coin acceptor. The board or the bill validator will have to be repaired.

Will not take bills, has a Bill Validator installed – No error or explanation why not responding
- Unit may not have enough change in change tubes. Does the unit display 'Exact change' if so, fill the tubes as described above.
- Unit isn't programmed to communicate to a bill validator or all the bills are turned off. Make sure to select save when making changes inside the parameters menu.

Coin-op Copier Interface
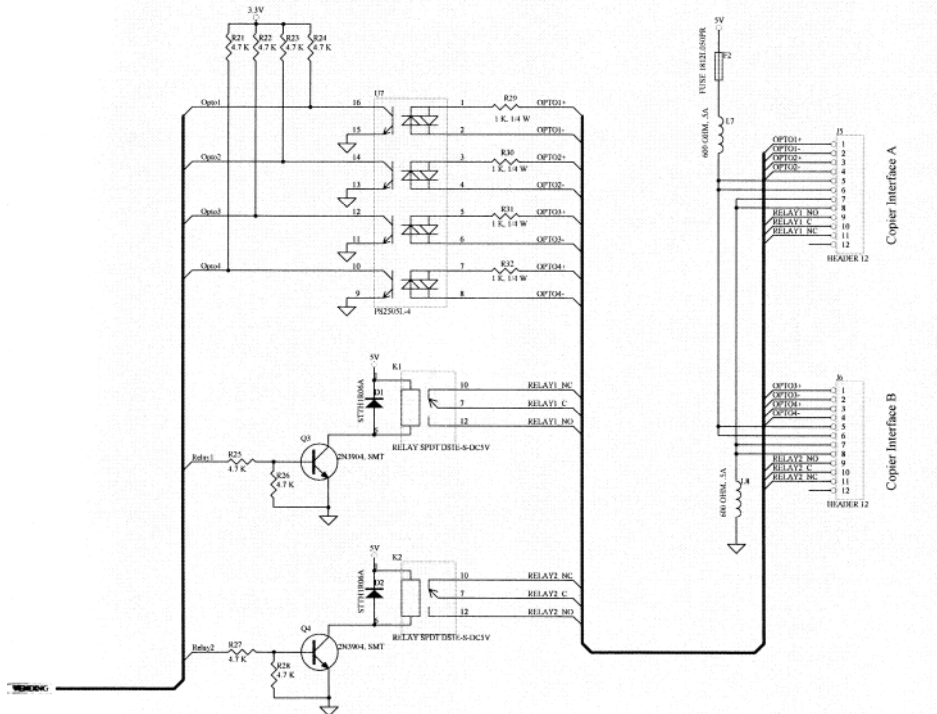
Pin	Function	State
J5.1	Opto1 +	Debit pulse +
J5.2	Opto1 -	Debit pulse -
J5.3	Opto2 +	Steering input 1 +
J5.4	Opto2 -	Steering input 1 -
J5.5	5 volts	
J5.6	5 volts	
J5.7	Ground	
J5.8	Ground	
J5.9	Relay 1	NO
J5.10	Relay 1	Common
J5.11	Relay 1	NC
J5.12		
Steering harness configuration		
J6.1	Opto3 +	Steering input 2 +
J6.2	Opto3 -	Steering input 2 -
J6.3	Opto4 +	Steering input 3 +
J6.4	Opto4 -	Steering input 3 -
J6.5	5 volts	
J6.6	5 volts	
J6.7	Ground	
J6.8	Ground	
J6.9	Relay 2	NO
J6.10	Relay 2	Common
J6.11	Relay 2	NC
J6.12		

Appendix A: Useful numbers:

Coin-Op Model:..

Date warranty expires:...

Serial Number:.......................... Door Key Number:............... By-Pass Key Number:.................................

Key holder/operator:... Tel #:...

Back up key holder:.. Tel #:...

Changer serial #:... Bill validator serial #:...................................

Settings changed to:

Parameter menu:

Item	Default setting	Your custom setting	
Peripherals	Bill validator: [No]	Bill validator	
Copy cost	$0.05 per copy	Price 1	per copy
	$0.05 per copy	Price 2	per copy
	$0.05 per copy	Price 3	per copy
	$0.05 per copy	Price 4	per copy
	$0.05 per copy	Price 5	per copy
	$0.05 per copy	Price 6	per copy
	$0.05 per copy	Price 7	per copy
	$0.05 per copy	Price 8	per copy
Bill types	$1.00 [No]	....	
	$5.00 [No]	....	
	$10.00 [No]	....	
	$20.00 [No]	....	
Max Cash value	$20.00 in escrow	....	
Delay	0.1 second	....	
Splash screen	2 seconds	....	
Splash period	10 seconds	....	

Please contact Boscop service for telephone assistance and trouble shooting. Any items returned can only be sent with a Boscop issued RMA number.

Items must be received in the proper packaging; Boscop will not be held responsible for damage caused by –

- Incorrect packaging
- Willful damage or neglect
- Rain or water damage

Call 603-744-2188 Ext 7# or email service@boscop.com

Boscop, Inc, PO Box 400, New Hampton, NH 03256
Phone: +1 603-744-2188 * Fax: 630-325-9201
E-Mail: sales@boscop.com Web: www.boscop.com

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